Remarks/Arguments

Applicants have carefully considered the rejection in the previous office action and submit the foregoing amendments and the following response. Claims 1-126 have been canceled and new claims 127-190 have been added. The amendments add no new matter, and are believed to place the application in condition for allowance.

The new claims

New claim 127 reads as follows:

> A method for prolonging life of drilling equipment, the method comprising:
>
> providing a drilling fluid system having effective rheology and fluid loss control properties, the drilling fluid system comprising a continuous phase comprising a dispersion comprising a quantity of fatty acid soap comprising alkali metal selected from the group consisting of lithium, potassium, rubidium, cesium, and combinations thereof,
>
> performing drilling operations using the drilling fluid system under conditions effective to maintain effective rheology and fluid loss control properties and to produce lubricated drilling equipment comprising one or more metal surface having improved lubricity.

Claim 127.

All of the new independent claims require the drilling fluid system to "maintain effective rheology and fluid loss control properties" under the conditions of drilling operations. Specification, p. 3, ¶¶ [0010] and [0011]. Dependent claims 128-130, 142-144, 163-165, 173-176, and claims depending therefrom, specify that the conditions comprise a temperature of: 250 °F (121 °C)" (claim 128); 300 °F (148 °C) (claim 129); and, 450 °F (232 °C). See claims 128-130; 142-144; 163-165; 173-176. Specification, p. 4, ¶ [0015].

All of the independent claims also require the drilling fluid system to produce on drilling equipment "one or more metal surface having improved lubricity." Specification, p. 3, ¶¶ [0010] and [0011]. Dependent claims also specify that "the improved lubricity comprises an increase of 25% or more in lubricating film strength compared to a control during extreme pressure testing." Claims 131-134; 145-148; 166; and 177-179. Specification, p. 12-13, ¶ [0034].

New independent claim 141 specifies that the continuous phase of the drilling fluid system is an "aqueous continuous phase." Specification, p. 4, ¶ [0015] and ¶ [0024]. New

independent claim 159 specifies: that the dispersion comprises a fatty acid soap comprising **lithium** New claim 171 specifies that the fatty acid soap comprises **lithium stearate.**

New claim 160, as well as dependent claims 155-159, 169-170, 182-189 specify that the drilling fluid system comprises **one or more polymers comprising one or more monomers comprising acrylamide**, or specify particular monomers for the polymer. Specification, ¶¶ [0025]-[0027].

Rejection of previous claims under 35 U.S.C. § 103

-Rejection over U.S. Patent No. 6,448,207 to Fukutani et al.

The examiner rejected previous claims 1-9, 13-24, 33-35, 37-41, 47-52, 58-60, 63-67, 69-74, 79-81, 83-88, 97-103, and 111-113 as obvious over U.S. Patent No. 6,448,207 to Fukutani et al.

Response

The examiner cannot establish a case of *prima facie* case of obviousness of new claims 127-190 over Fukutani, or over the other cited references. The United States Supreme Court (the "Supreme Court") has set out an objective analysis for establishing whether claims are obvious under 35 U.S.C. §103:

> [T]he scope and content of the prior art are ... determined; differences between the prior art and the claims at issue are ... ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

Graham v. *John Deere Co. of Kansas City*, 383 U.S. 1, ,17-18 (1966).

The Supreme Court recently observed that "inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. (2007), 000 U.S. 04-1350 (2007), slip op. 15. For this reason, "**[a] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, *independently*, known in the prior art.**" *Id.*, slip op. at 14 (emphasis added). In order to establish that a claim is obvious, the examiner must established that the claims are directed

merely to "the **predictable use of prior art elements according to their *established* functions.**" *Id.*, slip op. p. 13 (emphasis added). Where the examiner relies on a combination of references, the examiner must establish an **apparent reason to combine known elements** in the fashion claimed. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. _____(2007), slip op. 14.

The examiner cannot establish that the method of claims 127-190 is a predictable use of prior art elements according to their established functions. The examiner cannot establish that it was *predictable* to use Fukutani's metal working fluid to perform drilling operations. The examiner cannot demonstrate that it was an *established function* of Fukutani's metal working fluid to be used as a drilling fluid system. The examiner certainly cannot establish that Fukutani's metal working fluid would be a "drilling fluid system having effective rheology and fluid loss control properties." Claims. Nor can the examiner establish that Fukutani's metal working fluid would "maintain effective rheology and fluid loss control properties" when "performing drilling operations." Independent claims.

Applicant respectfully requests entry and allowance of new claims 127-190 over Fukutani.

-Rejection over U.S. Patent No. 3,761,410 to Mondshine

The examiner rejected claims 1-15, 19-32, 63-69, and 121 as obvious over U.S. Patent No. 3, 761,410 to Mondshine et al.

-Response

Mondshine is directed to the discovery that "the addition of a water insoluble alcohol . . . to which a lubricating additive is also added increases the lubricity of [a] water base drilling fluid to a much greater extent than does either the lubricating additive or the alcohol alone." Mondshine, col. 3, ll. 29-34.

The examiner boldly asserts that Mondshine teaches that the water component of the water based drilling fluids could be salt water or sea water (Mondshine, col. 6, ll. 50-64), and that the combination of salt water/sea water and vegetable oil (Mondshine, col. 5, ll. 1-10) would result in sodium salts of the vegetable oil. According to the examiner, the previous claims were obvious over these allegedly formed sodium salts.

First of all, formulation of drilling fluid systems is not a haphazard event. Mondshine explains the delicacy that must be exercised in choosing additives for drilling fluid systems, explaining that:

> some of the prior art additives are not effective at a pH above about 10.5. Certain additives are not effective in the presence of calcium or other polyvalent cations. Some of the proposed additives adversely affect other properties of the drilling fluid while still others are not effective if oil is present in the drilling fluid. Certain of the proposed additives are sorbed onto the surface of the solids present in the drilling fluid which may deactivate the additive and may cause oil wetting of the solids, hence flocculation and settling, particularly of the barite present as a weighting material. Some additives cause the drilling fluid to foam while still others are difficult to disperse in the drilling fluid. Some lubricants cause the drilling fluid to fluoresce under ultra-violet light which interferes with certain well logging operations performed to indicate the presence of oil in the formations being drilled. Many of the prior art additives must be used in such concentrations to be effective that it is uneconomical to use them.

Mondshine, col. 3, ll. 1-20. The foregoing teaches away from the bold, conclusory assertions made by the examiner regarding an alleged additive that would spontaneously form in Mondshine's drilling fluid if certain ingredients were combined. The rejection is a boldfaced rejection based on alleged inherence and hindsight reconstruction.

The examiner has not and cannot establish that the claims are directed merely to "the **predictable use of prior art elements according to their *established* functions.**" *Id.*, slip op. p. 13 (emphasis added).

The examiner certainly cannot establish that it was predictable to use a drilling fluid system comprising a continuous phase comprising "a dispersion comprising a quantity of fatty acid soap comprising alkali metal selected from the group consisting of lithium, potassium, rubidium, cesium, and combinations thereof." See claim 1. The foregoing list does not even include sodium.

Nor can the examiner demonstrate that it was an ***established function*** of any sodium salts of fatty acid that allegedly might form in Mondshine to "produce lubricated drilling equipment comprising one or more metal surface having improved lubricity." Independent claims. The examiner certainly has not pointed to any teaching in Mondshine to this effect.

The examiner cannot establish that claims 127-190 are directed merely to "the **predictable use of prior art elements according to their *established* functions.**" *Id.*, slip op. p. 13 (emphasis added).

Applicant respectfully requests that the new claims be allowed over Mondshine.

-Rejection of Claims 1-122 as obvious over Clark (5,658,860), alone or in combination with Chesser (6,403,537)

The examiner also rejected claims 1-126 as obvious over Clark, (5,658,860) alone or in combination with Chesser (6,403,537).

-Response

Clark is directed to an "oil-in-water" emulsion. Clark, Col. 4, ll. 45-54. In an oil in water emulsion, water is the continuous phase and oil is the internal phase. The fatty acid derivatives referred to by the examiner are described as suitable for use in or as the internal "oil phase." Clark, col. 4, ll. 45-47. Clark states that:

> Where environmental concerns exist, it is preferred in the practice of the present invention that naturally occurring fats, oils, hydrocarbons, and derivatives thereof be utilized as the oil phase component of the oil-in-water emulsion well fluid. Preferably, the naturally occurring fats, oils, hydrocarbons, and derivatives thereof be utilized as the oil phase component of the oil-in-water emulsion well fluid are selected to be non-toxic and/or biodegradable.

Clark, col. 4, l. 63 - col. 5, l. 3. The alkali derivatives referred to by the examiner Clark relate to the oil phase of Clark's fluid. Clark, col. 5, ll. 37-58.

The examiner cannot establish that a drilling fluid system comprising "a **continuous phase** comprising a dispersion comprising the claimed fatty acid soap comprising alkali metal selected from the group consisting of lithium, potassium, rubidium, cesium, and combinations thereof the claims" (independent claims) was "the **predictable use of prior art elements**" found in Clark. Nor can the examiner demonstrate that it was an **established function** of the claimed fatty acid soaps to "produce lubricated drilling equipment comprising one or more metal surface having improved lubricity." Independent claims. The examiner certainly cannot establish that it was predictable or an established function to produce all of the features defined by the other independent claims and the dependent claims. For these reasons, alone, the

examiner cannot establish that the claims are directed merely to "the **predictable use of prior art elements according to their *established* functions**." *Id.*, slip op. p. 13 (emphasis added).

The examiner also cannot establish "an **apparent reason to combine known elements** in the fashion claimed.: *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. _____(2007), slip op. 14. The examiner simply has not pointed to anything in Chesser that provides an apparent reason to to combine known elements in the fashion claimed. The examiner certainly cannot establish that it was predictable that a drilling fluid system comprising polymer comprising one or more monomers of acrylamide and the claimed dispersion of fatty acid soap would "maintain effective rheology and fluid loss control properties" when "performing drilling operations."

The examiner cannot establish that the claims are directed to "the **predictable use of prior art elements according to their *established* functions**." *Id.*, slip op. p. 13 (emphasis added). Applicant respectfully requests that the new claims be entered and allowed over Clark and Chesser.

CONCLUSION

For all of the foregoing reasons, Appellant respectfully requests that the obviousness rejection be withdrawn. The Commissioner is hereby authorized to charge any fees in connection with this paper, or to credit any overpayment, to Deposit Account No. 02-0429 (154-28553), maintained by Baker Hughes Incorporated

Respectfully submitted,

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